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United States Patent [19]**Hrubes**[11] **Patent Number:** **5,708,626**[45] **Date of Patent:** **Jan. 13, 1998**[54] **TRAJECTORY MEASUREMENT SYSTEM
FOR UNDERWATER VEHICLES**4,301,761 11/1981 Fry et al. 114/331
5,283,767 2/1994 McCoy 367/4[75] **Inventor:** **J. Dana Hrubes**, Newport, R.I.[73] **Assignee:** **The United States of America as
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Navy**, Washington, D.C.*Primary Examiner*—Daniel T. Pihulic*Attorney, Agent, or Firm*—Michael J. McGowan; William F.
Eipert; Prithvi C. Lall[21] **Appl. No.:** **775,233**[22] **Filed:** **Dec. 30, 1996**[51] **Int. Cl.⁶** **B63G 8/00**[52] **U.S. Cl.** **367/131**[58] **Field of Search** 367/131, 133,
367/907, 908, 99; 114/330, 331; 364/424.025[56] **References Cited****U.S. PATENT DOCUMENTS**

4,258,568 3/1981 Boetes et al. 367/131

[57] **ABSTRACT**

A system for determining the velocity and trajectory of an underwater vehicle comprises a data acquisition processor coupled to a plurality of sensors providing depth, heading, pitch and yaw data for the underwater vehicle. The acquisition processor collects data from the sensors, correlates and assembles the collected data into batches and processes the batches to determine vehicle velocity and trajectory of the vehicle relative to an earth-fixed coordinate system.

9 Claims, 4 Drawing Sheets